

PATENT SPECIFICATION

1,048,257

1,048,257



Date of filing Complete Specification: October 2, 1963.

Application Date: October 6, 1962.

No. 37909/62

Complete Specification Published: November 16, 1966.

© Crown Copyright 1966.

Index at Acceptance:—B1 D7BIX.

Int. Cl.:—B 01 d.

COMPLETE SPECIFICATION DRAWINGS ATTACHED

Improvements in or relating to Slurry Collecting Vessels especially Vessels for use in Acid Pickling Solution Regenerating Plants

We, EDWARD CURRAN ENGINEERING LIMITED, a British Company, of Hurman Street, Cardiff, and EUGENE CURRAN, a British subject, of the Company's address, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 In known apparatus, for example apparatus for regenerating spent pickling solutions after use in pickling ferrous metals, a slurry containing fine solid particles is treated in order to separate out the acid
15 contained in the slurry. The slurry is collected in vessels from which it flows to other vessels for further treatment and it has been found, in practice, that undesirably large particles or agglomerates tend to collect and obstruct the free flow of the slurry from a
20 collecting vessel.

It is an object of the invention to provide an efficient yet simple means for preventing the occurrence of such obstruction.

25 According to the invention, a vessel for collecting slurry containing crushable solids, for example ferrous sulphate crystals, is provided with an upper part having a discharge outlet for the slurry and with a lower
30 part having sloping sides converging on a drain outlet closable by a valve member adapted to be actuated from outside the vessel to a position displaced from a seating for the said member to provide a pas-
35 sage to a drain outlet duct for undesired relatively large particles or agglomerates, the arrangement being such that the valve member is arranged, when moving from said displaced position to its position in which it
40 closes the drain outlet, to break up particles which are too large to move freely into the drain outlet duct.

The invention is illustrated by way of
[Pric

example in the accompanying drawings in which

Fig. 1 is a vertical section on the line A-A of Fig. 2 and

Fig. 2 is a plan view of a slurry collecting vessel.

Referring to the accompanying drawings, 50 a collecting vessel 1 is arranged to be fed with a slurry through the open top of the vessel. This slurry may flow from an evaporating tower, not shown, which is arranged to separate water from a spent sulphuric
55 acid pickling solution flowing from a plant for pickling ferrous metal by subjecting jets of the solution to a heated gas. During the treatment ferrous sulphate crystals are formed and are present in the highly concentrated solution or slurry which is dis-
60 charged from the tower to the vessel 1.

The vessel 1 is provided with a drain outlet duct 2 which is closable by a movable valve member 3 manually operable by a
65 lever 4 which projects through a side wall of the vessel 1. This lever is mounted on a pivot 5 and is pivotally connected with a vertical rod 6 which carries the valve 3. The lever 4 is arranged to oscillate the rod 6
70 which is guided by a sleeve 7 mounted on arms 8 which extend diametrically across the vessel and are supported by the side walls of the vessel. The valve member 3 is arranged to bear on a hardened seating 9
75 which is disposed at the base of the vessel and is concentric with the drain outlet duct 2. The sides of the vessel adjacent this outlet are inwardly and downwardly inclined. Guide members 11 project permanently into
80 the outlet duct 2 from the valve member 3, these guide members being circumferentially spaced on the valve member. Undesired relatively large particles or agglomerates which move towards the outlet duct
85 2 when the valve member 3 is raised and

are too large to pass freely between this valve member and the seating 9 to the duct are crushed between the annular marginal portion 3a of the valve member and the seating when the valve member is returned to its closed position. In a modification, the valve member 3 may be formed as a piston which can be raised above the seating 9 and which is movable into the duct 2. In the case of the slurry which is referred to above, the solid particles of the desirably small size move with the slurry from the vessel 1 via a discharge opening 12 in the side wall of the vessel while larger particles sink to the base of the vessel.

Periodic actuation of the lever 4 will force these particles through the outlet duct 2, crushing such large particles or agglomerates which do not pass readily into this duct.

The upward movement of the rod 6 may be limited by any suitable means, for example by a stop on the vessel which is adapted to be engaged by the lever 4.

WHAT WE CLAIM IS:—

1. A vessel for collecting slurry containing crushable solids, for example ferrous sulphate crystals, which is provided with an upper part having a discharge outlet for the slurry and with a lower part having sloping sides converging on a drain outlet closable by a valve member adapted to be

actuated from outside the vessel to a position displaced from a seating for the said member to provide a passage to a drain outlet duct for undesired relatively large particles or agglomerates, the arrangement being such that the valve member is arranged, when moving from said displaced position to its position in which it closes the drain outlet, to break up particles which are too large to move freely into the drain outlet duct.

2. A vessel as claimed in Claim 1 wherein the valve member is mounted on a rod arranged to be reciprocated by a lever which projects through a wall of the vessel.

3. A vessel as claimed in Claim 1 or Claim 2 wherein the valve member is provided with circumferentially spaced guide members which are located permanently within the outlet duct.

4. A vessel, for collecting slurry containing relatively small solid particles, having a drain outlet controlled by a valve constructed and arranged to operate substantially as described with reference to and as illustrated by the accompanying drawings.

WM. D. JONES,
Chartered Patent Agent,
33 St. Mary Street,
Cardiff.
Agent for the Applicants.

1,048,257

COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of
the Original on a reduced scale.

